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| 10/686,696 | 10/16/2003 | Steven A. Billow | 86041N-R | 9171 |

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EXAMINER

NGUYEN, THINH H


ART UNIT

PAPER NUMBER

2861

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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/686,696 | Applicant(s) BILLOW, STEVEN A.  | |
| | Examiner Thinh H. Nguyen | Art Unit 2861 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-23, 25-29, 32-39, 41-51 is/are rejected.
- 7) ☐ Claim(s) 14, 24, 30, 31 and 40 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>5/18, 11/24, 10/16</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Double Patenting

1. Applicant is advised that should claim 17 be found allowable, claim 37 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 25 recites the limitation "the rotation position" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 7-11, 15, 17, 19-20, 26, 28, 37-39, 42-46, 49, 51 are rejected under 35 U.S.C. § 102(e) as being anticipated by Butterfield et al. (U.S.6,685,297)

Re claims 1, 17, 37, 45, 46, 49, Butterfield (figs. 1-3) discloses elements of the instant claimed method of aligning of printing dots generated by different nozzle banks of an inkjet printer apparatus comprising the steps of:

printing on a receiver medium a sequence of spaced discrete first dots from one nozzle bank having plural nozzles associated therewith (as described as nozzle(s) from printhead 20(1) in col.3, lines 43-45);

printing on a receiver medium a sequence of spaced discrete second dots from a second nozzle bank having plural nozzles associated therewith, the second dots being spaced from the first dots and at least some of the second dots being located at distances closer to at least some of the first dots than the respective nozzle spacings between nozzles on the second nozzle bank which emitted the at least some of the second dots and the nozzles on the first nozzle bank that emitted the at least some of the first dots (col.3, lines 45-62);

determining a placement error for the at least some of the second dots (col.4, lines 12-17); and

adjusting alignment of the second nozzle bank in accordance with any errors determined in placement. (col.4, lines 12-17) and

Re claim 26, error correction can be executed by the user input or programmed instruction stored in the processor which automatically controlled (col.3, lines 18-30)

Re claims 17, 37, the method according to step (c), (d), is explained through the user observation and input according to col.4, lines 3-9.

Re claims 2, 8, wherein the first and second nozzle banks print different color inks. (col.3, lines 38-43)

Re claims 3, 9, wherein the first and second nozzle banks print the same color ink. (as apparently shown by the method applied to a single printhead; col.4, line 17)

Re claims 7, 15, the first and second nozzle banks move in order to provide dots at different locations on the receiver medium and some of the first and second dots are printed during different passes. (different passes is understood to be taken besides printing simultaneously; col.4, lines 19-21)

Re claims 10, 11 at least one of the first and second nozzle banks prints ink of different drop sizes. (see 120 of the drawing, col.4, lines 26-29)

6. Claims 29, 32-39, 41-51 are rejected under 35 U.S.C. § 102(b) as being anticipated by Underwood et al. (U.S.6,109,722)

Underwood (col.3, fig.2) teaches printing on a recording medium a predetermined pattern of discrete pixels by plural recording elements of each of at least first and second banks, each discrete pixel being printed by a single one of the recording elements;

removing the recording medium from the printer apparatus; (scanned or printed test copies)

examining the recording medium or a reproduction thereof at a resolution of at least 500 DPI to derive electronic information relative to the location of pixels in the

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printed pattern; (viewed by user for alignment analysis at typical 600 DPI; col.3, line 5-13)

processing the information to determine respective centers of the pixels;

determining errors in location of the determined centers of the pixels from where the centers should be if the banks were properly aligned;

determining needed adjustments of a bank or banks or recording elements in the bank or banks to improve alignment of the pixel recording by such bank or banks or recording elements in the bank or banks ; and

adjusting alignment of pixel recording by at least one bank or at least some of the recording elements therein in accordance with a determination of needed adjustments.

Re claim 32, wherein the pattern of pixels is printed by multiple passes of at least one of the banks.

Re claim 33, wherein the recording elements are ink jet nozzles and the pixels are dots. (abstract)

Re claim 34, wherein at least some of second dots printed within a pattern on the recording medium and printed by respective second nozzles in a second nozzle bank are closer to first dots in the pattern and printed by respective first nozzles on the first nozzle bank than the respective nozzle spacings between the second nozzles and the first nozzles. (col.4, lines 60-66)

Re claim 35, wherein adjustment of alignment of a bank is made by providing information relative to timing of actuations of recording elements that corrects for alignment error of a bank. (col.4, line 45)

Re claim 36, wherein the pixels are scanned by a color scanner to determine pixels of different colors. (col.5, line 20)

Underwood disclosed the subject matter of claim 29-36, as noted above and further teaches, regarding claims 37-39, 41-51, the adjustment step of alignment includes correcting firing time, timing of actuation, generating through examination of the receiver medium, analyzing the recording medium to determine the location of dots recorded in accordance with expected location, generating an image file, in the context of varying drop ejection timing, firing timing (col.4, lines 43-59), pattern output and graphic display generated by scanner, printed pattern on receiver medium which is viewed by a user for alignment analysis with first alignment element are printed as reference position (col.2, lines 25-26; col.3, lines 10-13)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4-6, 12-13, 16, 18, 21-23, 27, 36, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butterfield in view of Underwood.

Butterfield discloses elements of the instant claimed subject matter as noted above with the exception of scanning the first and second dots on the receiver medium or a reproduction thereof with a scanner to determine relative dot placement.

Re claim 12, 13, wherein steps (a) and (b) and (c) are repeated at different spacings of the nozzle banks to the receiver medium.

Re claim 16, error is determined based on information about which nozzle printed which dot on which pass.

Re claims 5, 18, 36, scanning of the dots on the receiver medium or a reproduction thereof is made by a scanner at a location separate from a carriage on the printer apparatus.

Re claim 27, wherein adjustments to the alignment of the second nozzle bank are displayed on a display.

Re claim 41, wherein the first dots are printed in a different color from the second dots.

Re claims 4-6, 18, 36, Underwood teaches the similar method wherein test pattern patches evaluation may be performed such as by an optical scanner (digitized), photodetector, other than the human user; scanning of the dots on the receiver medium or a reproduction thereof is made by a scanner at a location separate from a carriage on the printer apparatus. (col.5, lines 19-20)

Re claim 27, wherein adjustments to the alignment of the second nozzle bank are displayed on a display. (scanner display)

Re claim 12, 13, 21, 22, 28, wherein steps (a) and (b) and (c) are repeated at different spacings of the nozzle banks to the receiver medium. (col.4, line 60 - col.5, line 8)

Re claims 16, 23, in the context of error is determined based on information about which nozzle printed which dot on which pass. (as described by nozzle mapping; col.3, line 55)

Re claim 41, wherein the first dots are printed in a different color from the second dots. (col.3)

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the scanner of Underwood in Butterfield for the purpose of provide visual analysis means in determining the dot alignment.

Allowable Subject Matter

9. Claims 14, 24, 30-31, 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claim 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Pertinent Prior art

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,241,334 to Haselby discloses alignment of nozzle.

Patent Application Information Retrieval (PAIR)

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Contact Information

13. Any inquiry concerning this communication should be directed to examiner Thinh Nguyen at telephone number (571) 272-2257. The examiner can generally be reached Mon-Wed, and Thurs from 9:00A – 5:00P. The official fax phone number for the organization is (571) 273-8300. The examiner supervisor, Dave Talbott, can also be reached at (571) 272-1934.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1782.



Thinh Nguyen
August 27, 2005

Thinh Nguyen
Primary Examiner
Technology Center 2800